ED001482 THE DIEBOLD LITERACY PROJECT: PROGRAMS FOR THE ILLITERATE ADULTS. Crohn, Burrill L. (The Diebold Group Inc., 430 Park Avenue, New York 22, N. Y.), 1964. 4p.

ERIC Document Resume	See Instruction Sheet	DATE OF RESUME	DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.	DO NOT WRITE IN SPACE BELOW
ED001482	N.A.	N.A.	

4. AUTHOR(S):
Crohn, Burrill L.

5. TITLE OF DOCUMENT ABSTRACTED:
The Diebold Literacy Project:
Programs for the Illiterate Adults

6. PUBLICATION TITLE:
N.A.

7. EDITOR(S):
N.A.

8. PLACE OF ORIGIN
The Diebold Group Inc.
ORG.
430 Park Avenue
ST
New York 22, N.Y.
CITY, STATE

9. PUBLISHER OR SOURCE The Diebold Group Inc.
430 Park Avenue
New York 22, N.Y.

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
N.A.	N.A.	1964	4

TELE. EXT.
INST/LOC CODE

MICROFILM COPY AVAILABLE
YES ☒ NO ☐

COPYRIGHT GRANTED
YES ☒ NO ☐

COPYRIGHT RELEASE FILED
YES ☐ NO ☐

TYPE OF REPORT
PROPOSAL ☐
IN-PROGRESS ☒
FINAL ☐
FOLLOW-UP ☐

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR
report

16. INDEXING TERMS (6-12)

programed materials	beginning reading	reading skills	
adult education	teaching techniques		
illiteracy	reading research		

17. ABSTRACT (MAX. 250 WORDS)

Adult illiteracy results from poverty, and, many times, suppression. Illiteracy is self-maintaining because illiterates cannot gain new knowledge or fully participate in economic, cultural or political life of their society. The Project was an attempt to apply the principles of programmed instruction to the teaching of reading to adult illiterates. The target population area was a Negro rural region of Mississippi in which 91% of the adults were illiterate.

Objectives of the programmed materials were to enable the subject to recognize a word by sight and to read aloud a number of words without pictorial or contextual supports and to develop other beginning reading skills such as phonetics and ability to recognize unfamiliar words from context. The materials developed thus far seek to provide a minimum number of words--words already in the learner's spoken vocabulary--as recognition vocabulary to be used, in turn, as models for exercises in structural and phonetic analysis. The material is presented in a double track program. One track provides the basic format of the books. To provide auditory stimuli, supply directions, assess oral responses and provide oral reinforcement, a second track runs parallel to the first. It utilizes a helper who must be a literate adult. Initial words were all common nouns, chosen for their configuration and phonetic ease, their incidence in the vocabulary of the target population, and their relevance as models for later lessons. The words were supported by pictures and the name spoken by the helper. Through a series of discriminations, these cues were faded, and the terminal frame for the sequence asked the student himself to read the isolated word aloud.

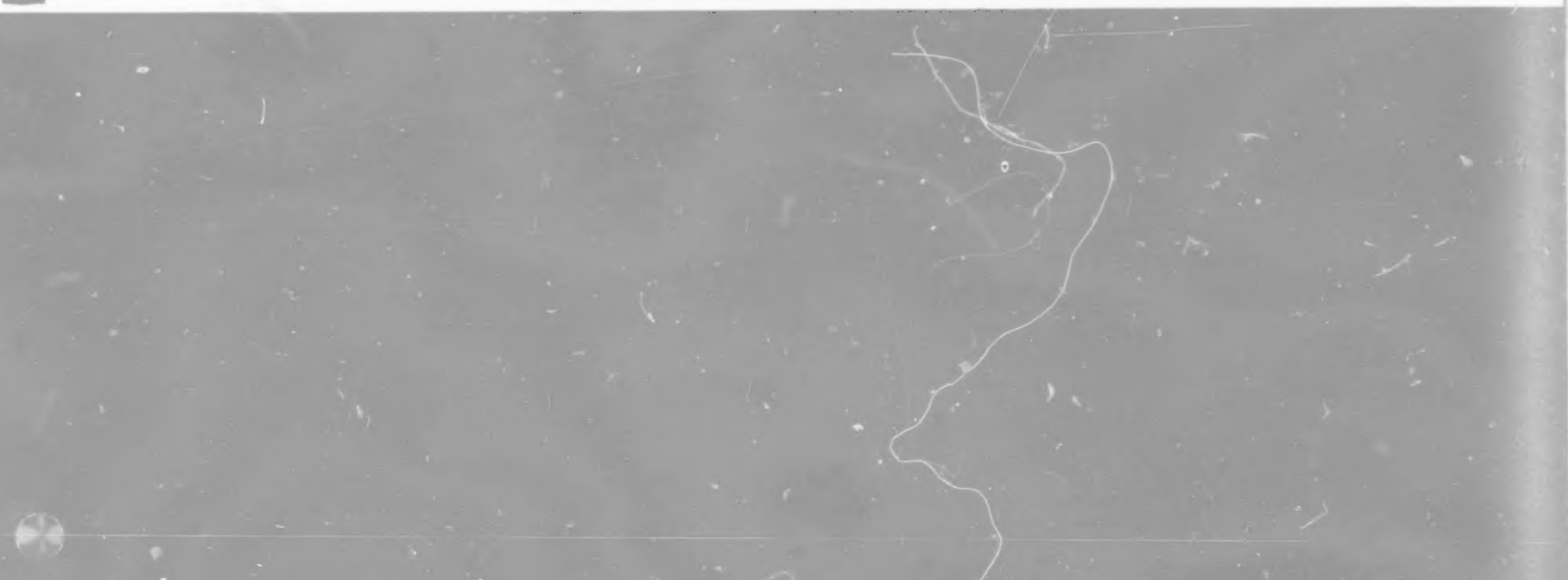
ERIC No.	18. SOURCE OF ABSTRACT		
	C. FUNDING DATA		
	19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. PROJECT NO.
		22. TOTAL COST OF PROJECT	
		23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

ED001482

THE DIEBOLD LITERACY PROJECT

By Burrill L. Crohn



REPRINTED BY PERMISSION
U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN PRINTED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Diebold Group Reprint Series

The Diebold Group, Inc.

The Diebold Literacy Project: Programing for the Illiterate Adult [1]

BURRILL L. CROHN

Associate Director, The Diebold Literacy Project, The Diebold Group, Inc., New York City.

The Problem

In today's world, illiteracy is one of the most severe handicaps an individual or a nation, can suffer. A product of poverty and, in some cases, class or racial suppression, illiteracy contributes to continued impoverishment of individuals, groups, and nations by blocking access to knowledge and technological sophistication, the tools for economic and cultural growth. The illiterate is denied full participation in the economic, political, and cultural life of his society. Often this deprivation of human experience becomes the illiterate's sole legacy to his children.

Programed instruction represents a promising approach to the problem. Small steps, self-pacing, and immediate and constant reinforcement are particularly relevant for training the illiterate. Formulation of teaching objectives through behavioral analysis of reading skills promises to result in a revaluation of known techniques of reading instruction as well as the formulation of new methods. By virtue of its self-instructional nature, programed learning is highly appropriate for areas with a shortage of qualified teachers, technical facilities, and financial resources.

The Project

The Diebold Literacy Project is an attempt to apply the principles of programed instruction to the teaching of reading to adult illiterates. The first phase of the operation, scheduled for one year's duration, concentrates on the development of materials for a specific target population: adult illiterate Negroes residing in the Mississippi Delta region.

This phase of the project is sponsored by Tougaloo College, a predominantly Negro school located in Tougaloo, Mississippi, ten miles from Jackson. The project is under the direction of Dr. John W. Blyth, Director of the Programed Learning Department of the Diebold Group, Inc. Reading consultants to the project are Dr. William Sheldon, Director of The Reading Center at Syracuse University, and three members of his staff. In addition to the Director and Associate Director, the project's full-time staff includes programers, testing administrators, and production personnel. Staffing represents a combination of skills and knowledge in reading instruction, programed learning, production procedures, and familiarity with the cultural, economic, and language environment of the target population. Project members were recruited from both Mississippi and New York. The project has an office on the campus of Tougaloo College where some of the program preparation and developmental testing occur.

Recruitment of test subjects for developmental testing was conducted in neighboring rural communities through personal contact, communications with religious and community leaders, and city and state agencies. A second developmental testing phase will be conducted in the homes of a small sample of selected families from these communities. Final field testing will be coordinated with the intensive educational, vocational, and cultural activities to be conducted in the Delta region, beginning this summer, by religious and civil rights organizations.

The Target Population

The target population area for this program is the rural section of the region in Mississippi called the Delta. This area is representative of any region whose characteristics typically produce a high degree of illiteracy. The Delta area is economically depressed, lacks technical facilities, has an inadequate school system, and has cultural and dialect, as well as geographic boundaries. The general social and economic characteristics of the rural Negro population in the Delta can be seen by studying the Negro population in one Delta county.

Tunica county is located in the northwest corner of the state. Eighty per cent of its population resides in rural areas. Most of the employed in this area are farm managers or workers. The median annual income for Negro families is $922; median annual individual income is $406. Of the 5,381 Negroes in Tunica county who are 25 years or older, 803 have not had any schooling whatsoever; 2,484 have completed four years of schooling; another 1,020 have a sixth-grade education. Only 66 have a high school education, and 27 have completed college. The median number of school years completed for this group is 4.0 years. A functional illiterate has been defined as a person with less than an eighth-grade education. By this standard, Negroes in Tunica county have a functional illiteracy rate of 91 per cent.

Specification of Objectives

Illiteracy has a specific meaning. Children just beginning to read and write are not called illiterate; adults are. Children develop skills in interpreting a spoken language at the same time as they learn reading and writing skills. Adults who cannot read or write can, however, communicate in a spoken language. Illiteracy, then, is a deficiency in reading and writing skills. The first objective of a literacy program must be the introduction of elements of a written language to establish the proper connection between these elements and the elements of the spoken language already existing within the illiterate's repertoire.

In defining the program's objectives, we assume a level of command of the spoken language by the illiterate. The test of literacy materials is whether they develop the learner's ability to read written materials in a spoken language that effectively communicates with people within his linguistic and cultural group. Thus, there is no teaching of a preferred pronunciation. "Correct" pronunciation is that which is predominant among the target population. Similarly, there is no attempt to teach preferred meanings of specific words. Individual word meaning is a function of prevailing usage among the target population.

---

[1]Copyright © 1964, The Diebold Group, Inc., 430 Park Avenue, New York 17, New York. The author wishes to thank Richard Murphy, Programing Editor of the Literacy Project, for his assistance in the preparation of this report.

BLANK PAGE

Our objectives for the initial phase of the program can be stated as:

1. *Sight Recognition.* Though reading is usually covert behavior, evidence of reading is expressed overtly—reading out loud, responding to a written direction, answering a written question, etc. Reading out loud consists of articulating the appropriate verbal sounds in the presence of written symbols. Sight recognition is the ability to read out loud a given number of words, presented without any pictorial or contextual support, pronounced in a manner that transmits meaning to other members of the learner's cultural and linguistic environment.

2. *Information Reception.* The learner must identify the sound he makes in the presence of a written word as the sound of a word already part of his spoken vocabulary. By this process he derives meaning from the written word. When words are combined in phrases and sentences, meaning is obtained not only from the individual words but also from their syntactic and contextual relationship to each other. Reading skill is the ability to interpret, and thus receive information from the written word. Evidence of this reading skill can be observed by changes in the learner's behavior occasioned by the information he reads. If the learner reads a sentence that states, "Open the window," and then proceeds to do so, he is demonstrating reading ability; if he opens the door or does nothing at all, he has not been taught to read.

3. *Independent Recognition.* To some extent reading ability involves the use of previously learned information to master unfamiliar material. There are three reading situations in which this is true:

a. the articulation of words not previously introduced as written stimuli, though part of the learner's verbal sound language, from an analysis of its phonetic components

b. the interpretation of unfamiliar words not part of the learner's spoken language vocabulary through analysis of the word structure and its syntactical and contextual support

c. the articulation and interpretation of familiar words in unfamiliar sentence structure through an understanding of syntactical structure and contextual relationships

The literacy program will develop these three forms of independent recognition.

Format

Applying the principles of programed instruction to literacy training raises severe problems in the development of a mode of presentation. The format used must provide for the introduction of auditory as well as visual stimuli. The format must also be designed so that the accuracy of the learner's oral responses can be evaluated and confirmed. Presentation of auditory stimuli must be in accordance with the speech and dialect patterns of the target population area; assessment of the learner's oral responses necessitates a similar familiarity with the language patterns of the learner's community.

The method of presentation must meet the economic needs of the target population; that is, its per unit cost should be as inexpensive as possible. Its operation must be simple to understand and practice. It cannot rely on the technical facility of the user. It must be designed to be free of repair needs. It must be readily accessible, transportable, and easily incorporated into target population members' homes.

The use of audiovisual teaching machines was explored, but because of the above requirements, we decided that the essential components of format for this particular target population began with pencil and paper. Consequently, we have devised a presentation mode we call the "double-track program." The basic format is a programed book. To provide auditory stimuli, supply directions, assess oral responses, and provide oral reinforcement, the program is designed to utilize a literate "helper" from the language community of the learner. This helper may be a relative, friend, or interested volunteer. The helper's track requires programing as precise as the learner's. By careful testing and data analysis of learner and helper interaction, the double-track program becomes a controlled tutorial situation.

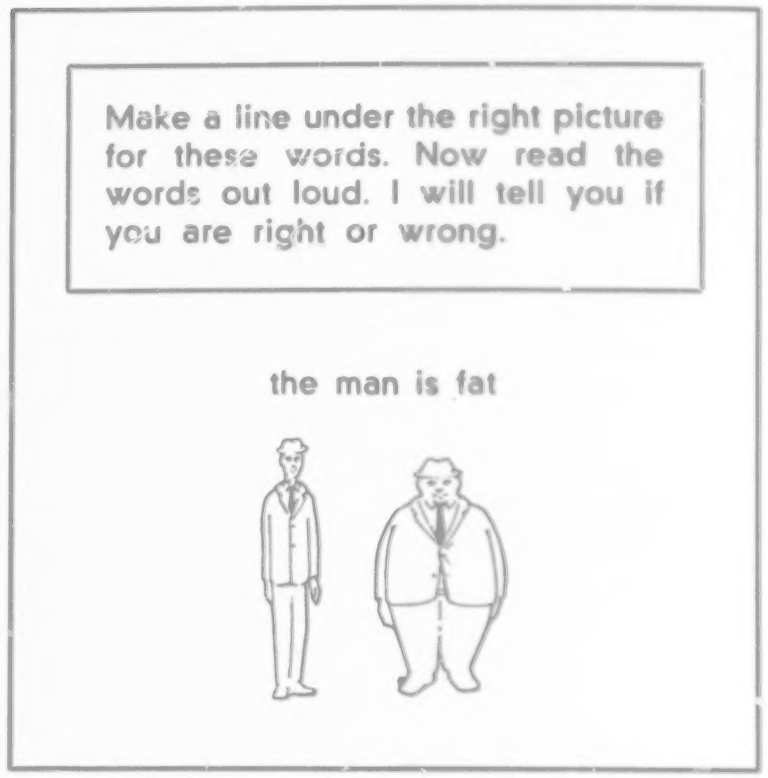

Make a line under the right picture for these words. Now read the words out loud. I will tell you if you are right or wrong.
the man is fat

Fig. 1.

The learner's track of the program consists of frames presenting material to be taught. The helper's track, running parallel to the learner's, programs his interaction with the learner. A typical frame, combining both tracks, can be seen in Fig. 1. The stimulus for the helper—the material to be read by him—is enclosed at the top of the frame. *Reading this material out* loud (and, if so directed, performing an action) constitutes the helper's response. The visual stimulus (verbal or pictorial) presented to the learner is beneath the helper's portion of the frame. The auditory stimulus for the learner is thus always provided by the helper's response. The learner is on a fixed-reinforcement schedule, receiving visual confirmation of his response on the following page, or auditory confirmation from the helper. It is postulated that the helper finds his participation in the learner's progress rewarding. In this sense he too might be said to be on a fixed-reinforcement schedule—every correct response the learner makes confirms the helper's "teaching" behavior. However, this leaves the definition of "progress" too vague and might be subject to individual interpretation by each helper. Therefore specific frames in the helper's track help him identify progress as measurable changes in the learner's reading behavior. Simply stated, the behavioral objectives for the learner are the acquisition and demonstration of reading skills; the helper's objectives are to interact with the learner in such a way that the learner's objectives are obtained.

Programing Reading Skills

The initial goal of our program was to develop a minimum number of words, words already in the learner's spoken vocabulary, as recognition vocabulary to be used, in turn, as models for exercises in structural and phonetic analysis. In our first developmental versions the program began by teaching these words. The initial words were all common nouns, chosen for their configurational and phonetic ease, their incidence in the vocabulary of the target population, and their relevance as models for later lessons. The words were supported by visual and auditory cues—the picture of the object, the name of the object spoken by the helper. Through a series of successive discriminations the cues were faded, and the terminal frame for the sequence asked the student to read the isolated word. We provided context by presenting the words in logical groupings; for instance, the nouns "bed," "chair," "table," and "door" were

all presented in one lesson teaching the reading of words for familiar objects in a room. Having learned all these words, the student could then be trained in the finer discriminations of phonetic analysis, recognition of rhyme endings and initial consonants, and similar exercises for the building of reading skills.

Our first developmental testing proved the existing sequence unsatisfactory but at the same time provided interesting and useful data to guide our revisions. Although the error rate on individual lessons was low, retention, as evidenced by review frames in subsequent lessons, was poor. A record of student errors showed that wrong responses usually came from the same context group as the stimulus word (e.g., if the word "bed" was the stimulus, a mistaken response would typically be "chair," rather than such contextually unrelated words as "ham" which bears closer configurational similarity to the stimulus word than did the learner's choice).

Two important areas for revision were revealed by our test data. One was the need for further training in visual discrimination. Sequences were inserted that began with discrimination training for abstract geometric forms and ended with discrimination of whole words by their over-all configuration. Other sequences concentrated on discrimination between letter shapes.

The other important revision resulted from our decision to increase the use of context as stimuli support. People talk in meaningful language units—words, phrases, sentences. We had used the smallest of these as our starting point. The limitations of this approach were now clear, for, regardless of their assignment into logical groups, isolated words lack the contextual and syntactic support of larger language units. People rarely just say "bed." They are more likely to say, "I am going to bed" or "Get out of bed." The body of the whole sentence serves as context for the individual word. And, of course, being able to read a meaningful phrase is more reinforcing than reading a single word—not because the sentence is quantitatively larger than the word but because the sentence, expressing a complete idea, more closely resembles the pattern of speech. For these reasons we shifted the emphasis of the initial lessons to include short sentences as soon as possible.

By introducing words in phrases and sentences, the syntactic relationship between words is stressed as cues to meaning. Picture clues are still used, but in these revised versions they cue the complete sentence, not just the noun serving as the subject of the sentence. Thus meaning must also come from knowledge of words that cannot be cued pictorially—articles, conjunctions, state-of-being verbs, prepositions. These words, syntactic elements common to many sentences, are taught as recognition vocabulary before the student learns a large number of nouns. Sequences teaching these words demonstrate their syntactic function. For instance, the article "the" is introduced early in the lessons by pairing it with a number of different nouns (e.g., "the man," "the woman," etc.). The student does not respond to isolated nouns in these frames; that is, there are no terminal frames that require him to respond to the noun without picture, sound, or context cues. However he does learn the article as a sight-vocabulary word through these frames and additional frames training word-configuration discrimination.

Similar sequences develop other syntactic elements utilizing the newly learned vocabulary. After the article "the" has been taught, it can be used to introduce the conjunction "and" in such phrases as "the man and the woman." Building phrases and sentences in this manner continually reviews old words as new ones are being taught. Combining the syntactic elements with various nouns introduces the pictorial representation for each noun, to be faded later when each noun is taught as sight vocabulary.

With a number of unrepresentationable syntactic words now a part of the learner's repertoire, other words—nouns, adjectives, action verbs—previously supported by picture cues can now be taught as sight vocabulary. Pictures that cue individual words cannot adequately convey meaning for phrases and sentences. Our lessons use the syntactic elements of a sentence, together with context, as picture cues are faded. Picture cues are faded by building larger (or more) phrases and sentences around the same picture. This method gradually transfers stimuli strength in frames from the accompanying pictorial representations to the structure of the sentences themselves.

Intervening sequences use the sight vocabulary to teach phonetic and structural analysis. Terminal behavior is to have the student respond properly to sentences without any pictorial support, using his recognition vocabulary, his ability to make syntactic and contextual relationships, and his knowledge of the phonemic and morphemic structure of words to derive pronunciation and meaning from unfamiliar words.

The additional support provided by auditory stimuli is faded in much the same manner. Where early frames are accompanied by the helper's reading the sentence out loud before the learner, in subsequent frames the helper's accompanying statements are more in the nature of thematic prompts (e.g., "These words tell us about a different kind of man" or "These words tell us what the man is doing") until they, too, are faded. We are attempting to sequence our material so that the student is able to read simple frame directions as soon as possible. As vocabulary expands, many new words will appear in the frame instructions to be read by the student. Thus, by the very act of responding correctly to a frame, the student will be evidencing comprehension of the written word through his ability to interpret directions.

The teaching of adjectives provided another useful application of context. The introduction of one adjective thereby implies its antonym. Pairs of adjectives are introduced with common nouns. As one adjective is taught, the contextual concept of its opposite is a useful prompt for teaching the other.

Because we initiate our program with phrases and sentences, grammatical conventions and punctuation immediately become corollary teaching problems. The choice was either to teach and observe correct conventions from the very beginning or gradually to build the elements of grammar and punctuation into other lessons, introducing them where they would have meaning *in relation to the learner's development. We chose the* latter. We found that learning the responses to letters, words, phrases, and sentences was a sufficiently taxing beginning for the student without adding the additional symbols and variations on known symbols that grammar and punctuation require.

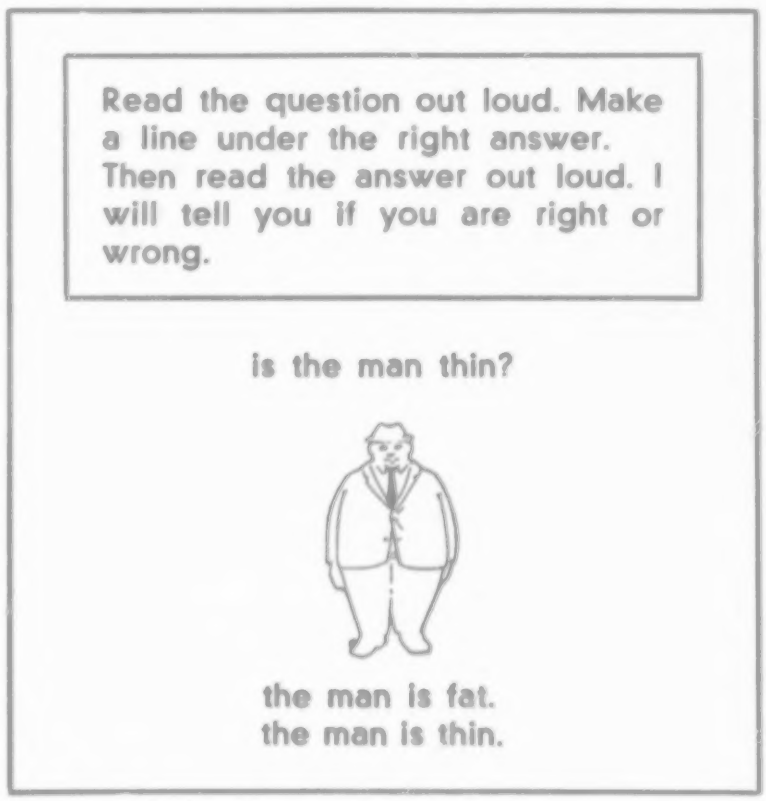

Read the question out loud. Make a line under the right answer. Then read the answer out loud. I will tell you if you are right or wrong.
is the man thin?
the man is fat.
the man is thin.

Fig. 2.

Continuing in our effort to develop the program according to the patterns of speech already familiar to the learner, the first grammatical element we introduce is the question, with its attendant punctuation, the question mark. Not only is the question-and-answer interchange basic to speech patterns, but it is similar to the construction of frames. The early introduction of the question is an initial step toward a self-instructional program. It also gives us the context in which to introduce words such as "what," "why," "how," and "where."

Along with the term "question" we introduce the term "answer"—not sentence—and identify it by the period after the last word. Formal definitions of the sentence have more requirements than are available to the student at this point in the program. Thus our frames developing question and answer present sentences that are followed by a question mark or period but do not begin with a capital letter or have any other punctuation marks. As the program progresses, other elements of grammar and punctuation are introduced as the need for them arises from the student's development.

The Future

Our immediate goal is to develop a fully validated program. We expect to have completed materials for fifty to sixty student hours of instruction by the end of this phase of the project. We cannot at this time accurately predict the level of reading skill that will be attained by the target population upon completion of our program. Developmental testing serves a diagnostic need by providing data about the skills and abilities of illiterates beyond that obtained from pretesting. As we learn more about the target population, we learn more about the type and extent of programing required. At the present rate of development, the frame shown in Fig. 2 occurs during the eighth hour of instruction.

A more far-reaching, though equally important, goal is to develop a generalized outline that can be applied to the development of a program for the training of illiterates in other dialect, cultural, or language areas. Analysis of the target population will determine the needs of specific groups; where the structure of existing sequences proves applicable, a detailed outline can be used to generate frames rapidly and economically. Our programing outline utilizes a coding system for the stimulus, response, and confirmation elements of every frame in both the learner's and the helper's tracks.

Many areas for research and further exploration have become apparent during this project. Possibly the most important is to determine the factors influencing the illiterate's attitude toward learning.

We are trying to establish an optimum study schedule for the program. Part of the information we need can be obtained from developmental testing: the effect of lesson duration upon alertness, interest, and performance. Yet this information must be supplemented with knowledge of the learner's environment —his work, the routine of his day, the physical conditions in his home.

Similarly, in our attempt to find nonprogramed activities to strengthen retention and maintain interest, we must attempt to integrate the knowledge the illiterate gains from the program into the more diverse areas of his life. One of our efforts in this direction is the arrangement with a local newspaper to run a special column for students taking our program. Readers of the newspaper will have their attention directed to this column and be asked to show it to any of their friends or relatives who are taking the Literacy Program. The reading level and vocabulary of the material in this column will be designed to develop in pace with the students' progress in the program.

We are preparing instructional materials based upon theories that postulate that the constant emission of correct responses is positively reinforcing, leading to successful learning. Yet our target population is composed of people who have had little experience with rewards of this kind. It seems certain that no matter how effective our program is, unless concurrent efforts are made to upgrade the learner's environment, positive behavioral change will not be maintained.